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ABSTRACT

Six tests were given to the entire sophomore class (120 males, 104 females) at a suburban school north of Boston before and after particiaption in the Project Adventure physical education program, some goals of which were the development of students' self confidence, improved self-concepts, ability to take physical, emotional, and social risks, decreased passivity, and improved physical functioning, by using many Outward Bound techniques and concepts. The tests included the Tennessee Self-Concept Scale, School Climate Survey, Student Description Form, a questionnaire, an aerobic physical fitness test, and the Rotter Scale of Internal vs. External Control of Reinforcement. Limitations of the study were the lack of a control group, non-testing of absentees, and having a project staff member as evaluator. Results in the school climate category indicated no significant changes in the boys as a group, while the girls saw an increase in teacher warmth and in organizational clarity. Participants perceived a significant decrease in general enthusiasm in the school. In the category of physical self, significant improvement resulted. An overall increase in general self-concept took place, especially in the girls. One of the most significant results was the difference in responses of the boys and the girls, who did much better than expected, to the project. (AN)

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PROJECT ADVENTURE - YEAR I

Final Quantitative Evaluation

For 1971-72

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RC 012560

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Project Adventure

Quantitative Evaluation for 1971-72

ABSTRACT OF REPORT

A battery of six tests was given to 224 sophomores at Hamilton-Wenham Regional High School before and after participation in the Project Adventure physical education program and in other Project-related activities. Significant change was found in decreasing perception of external control as measured on the Rotter Scale. The Tennessee Self-Concept Scale showed significant positive increase for females on five dimensions. Males showed significant decrease in Total Conflict on the same scale. Both groups improved significantly on most physical dimensions on the AAHPER tests.

Results suggest the program has more than physical effect on students. Females appear to show greater gains in self-concept.

Final Evaluation

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Project Adventure
Final Evaluation for 1971-72

INTRODUCTION

Project Adventure is an innovative educational program funded under ESEA, Title III. In its first year the Project focused its activities in the Hamilton-Wenham Regional High School, a suburban school of 850 students located north of Boston. The overall goals of the Project were to develop and teach a tenth grade physical education curriculum based in part on some of the concepts and practices of Outward Bound. The Project endeavored to involve students and faculty in developing experiential dimensions within the existing science and social studies curricula. Their experimentation took many forms - a volunteer tutoring program, rigorous camping experiences, an action seminar on boat building and the sea, trips to Boston for Urbanology and Minorities classes, a monthly recycling drive, and a variety of other activities.

Despite its physical and outdoor orientation, many of the Project's major objectives for students lay in the affective realm. These included the following: development of self confidence, improved self-concepts, ability to take both physical, emotional, and social risks, decrease in passivity, as well as improved physical functioning.

RESEARCH DESIGN

Clearly, the breadth and depth of the Project's goals and activities necessitated a variety of evaluative methods - both qualitative and quantitative. In planning the evaluation, several people who had done research on Outward Bound were consulted. They included Richard Katz, PhD. of the Department of Psychology, Brandeis University; Francis Kelley, Associate Professor of Counseling Psychology at Boston College; Reigh Wetmore, PhD., Instructor at the Boston University School of Physical Education and Recreation; and Ellsworth Fersch, PhD., Principal Psychologist of the Division of Legal Medicine of the Massachusetts Mental Health Association and instructor at Boston University. All were extremely cooperative. Dr. Fersch was retained as an ongoing consultant in research design and interpretation of data. Richard Gula, PhD. candidate at Harvard University assisted in the areas of programming and data processing and was extremely helpful.

Population

The quantitative evaluation was limited to participants in the physical education course and included a battery of six tests. The subjects were 224 tenth grade students (120 males, 104 females) at Hamilton-Wenham Regional

High School. They represented an average population of small town/suburban students from a slightly higher than average socio-economic background.

Test Instruments

A total of six tests were given.

1. Tennessee Self-Concept Scale which consists of 100 items designed to measure self-concept in different dimensions:

    a. physical self
    b. moral self
    c. total positivity
    d. positive identity
    e. positive behavior
    f. self-criticism
    g. family self

2. School Climate Survey, a test based on David McClelland's Classroom Climate Survey. It measures students' attitudes toward the school as a whole in the areas of power, achievement, affiliation, and apathy. The latter dimension was our own addition.

3. The Independent School Association's Student Description Form which evaluates students on a scale of 1 to 5 on the following dimensions:

    a. participation in discussion
    b. involvement in classroom activities
    c. pursuit of independent study
    d. evenness of performance
    e. critical and questioning attitude
    f. depth of understanding
    g. personal responsibility
    h. consideration for others

4. A Questionnaire was designed to measure the kinds and the amount of students' leisure time activities, attitudes toward the Project, and plans for the future.

5. The American Association of Health, Physical Education, and Recreation Test of physical fitness and a 12 minute running test adapted from aerobic exercises.

6. The Rotter Scale of Internal vs. External Control of Reinforcement which measures the degree of perceived external control.

Methodology

Six tests were given to the sophomore class before and after participation in the physical education program - in October, 1971 and June, 1972. The Student Description Form was also filled out for each student in October and

June by English teachers and science teachers. Each student also rated himself on these same eight dimensions. Self and teacher ratings were compared on matched T-Tests.

Limitations of the Study

It should be pointed out that the study has several major limitations. One is the lack of a control group. The second is the fact that no follow-up was done for students who were absent on days when the tests were administered. And third is the fact that the evaluator was also a staff member of the Project, though one specifically hired to evaluate the Project. (This possible lack of objectivity may, however, be counterbalanced by awareness of the subtleties and many dimensions of the Project.)

RESULTS

Introduction

The results for this report, analyzed by computer using DATA-TEXT, will be presented according to the main hypothese in the study. The categories used in presenting the results will be:

1. school climate
2. physical self
3. general self-concept
4. attitudes toward Project Adventure
5. differences in responses of girls and boys

Results by Category

1. School climate. The results displayed in Tables I and II (pages 5 and 6) show that there were a number of significant changes in the responses of the participants in Project Adventure to the climate in their school as measured before and after the first year of the Project. Boys, as a group, did not show significant changes. Girls saw an increase in teacher warmth and an increase in organizational clarity. Overall, the entire group of participants saw a significant decrease in general enthusiasm in the school. The scale which measured that characteristic contained three items, one of which tapped attitudes toward student government. Inasmuch as student government in the school had tried to function effectively but had failed for reasons other than the Project, the relation of that scale to real school enthusiasm is hard to estimate.

   Additional material concerning school climate will be presented in the discussion section of this report.

2. Physical self. The results displayed in Table III (page 7) show that the students improved in their performance on virtually all of the physical education tests as measured by the American Association for Health, Physical Education, and Recreation test of fitness.

   The final item, the twelve minute run, was adapted for the aerobic exercises done in the final unit. Boys showed an average gain of half a lap over the three month period and girls gained 3/10 of a lap.

3. General Self-Concept. The results displayed in Tables IV through VII (pages 8 through 11) show a general increase in the self-concept of all the participants.

   Rotter
   Using the T-Test for significance between correlated means, a difference of -.620 was obtained, significant at the .028 level on the Rotter Scale of Internal vs. External Control.

   Table V summarizes the distribution of scores pre- and post-. Movement was largely downward, with 8.5% of the sample scoring below 4 on the post- test, as compared to 3.9% on the pre- test.

   Tennessee
   As shown in Table VI, change in scores on matched T-Tests reached significance on six of the twelve dimensions. Further breakdown in Table VII reveals that decrease in "total conflict" was significant for boys at p .001. For girls alone, significant change occurred in the areas of self-criticism, total positivity, positive identity, positive behavior, moral self, and family self.

   The lack of significant change for any group on the dimension of percaption of physical self should also be noted.

4. Attitudes toward Project Adventure. While the participants' attitudes toward the Project were not directly investigated in the quantitative part of this report, an interesting indirect measure of their satisfaction with the program emerged. At the end of the year, the students were much more ready to fill out the evaluation forms; they did a more complete job on the forms; and they cooperated fully with the evaluation staff. Many of the changes reported reflected this increased investment in the Project.

5. Sex differences. A brief summary of the main differences between the boys and the girls shows that the girls changed more than did the boys: on school climate, girls perceived an increase in teacher warmth and in organizational clarity; over time, the girls saw themselves as participating more in discussion; English teachers saw significant increases in the girls' evenness of performance, increasing critical attitude, and increasing depth of understanding; science teachers saw increases in the girls' critical attitude, but a decrease in their taking of personal responsibility; girls showed more positive self-concept changes; and girls increased in all save two of the physical education tests. (Boys here did better, increasing in all tests.)

Table I

School Climate Survey	Pre- Test		Post- Test		T-Test		
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$ Diff.	SD	p
Teacher Warmth	8.10	1.72	8.53	1.67	.283	1.77	.043
Togetherness	7.82	1.59	7.89	1.39	-.018	1.69	NS
Morale	6.67	1.63	6.88	1.72	.120	2.05	NS
Standards	8.44	1.47	8.08	1.24	-.325	1.70	.016
Organizational Clarity	8.23	1.45	8.34	1.27	.060	1.52	NS
Responsibility	7.57	1.44	7.83	1.35	.193	1.62	NS
Personal Satisfaction	8.67	1.90	8.87	1.64	.078	1.87	NS
General Enthusiasm	7.13	1.76	6.64	1.49	-.596	1.98	>.001

Table II

School Climate Survey		Pre-, Post- Comparison (Matched T-Tests By Sex) $\bar{X}$ Diff.	SD	p
Teacher Warmth	male	.220	2.00	NS
	female	.360	1.44	.036
Organizational Clarity	male	-.165	1.64	NS
	female	.333	1.30	.031
General Enthusiasm	male	-.462	2.07	.038
	female	-.760	1.86	>.001

Table III

AAHPER		Pre- $\bar{X}$	Post- $\bar{X}$	T-Test $\bar{X}$ Diff.	SD	p
# Sit-Ups Per Minute	male	34.5	37.3	2.8	3.8	>.001
	female	26.7	32.1	6.2	5.6	>.001
# Pull-Ups or Flexed Arm Hang	male	4.6	6.1	1.4	1.4	>.001
	female	31.4 sec.	31.3 sec.	.38	15.5	NS
Shuttle Run	male (30 ft.)	9.1 sec.	Figures Incomplete			
	female (40 ft.)	13.0 sec.				
300 Yard Run	male	49.1 sec.	45.4 sec.	-3.77	10.73	.007
	female	61.3 sec.	54.1 sec.	-6.93	9.54	>.001
50 Yard Dash	male	7.2 sec.	7.0 sec.	-.18	.47	.003
	female	7.9 sec.	7.8 sec.	-.05	.68	NS
12 Minute Run (# of Laps)	male	5.8 laps	6.3 laps	.53	.72	>.001
	female	4.4 laps	4.7 laps	.37	.78	>.001

Table IV

Rotter Scale of Internal vs. External Control Scores
Before and After Participation in Project Adventure

	Pre- Test (N=203)		Post- Test (N=176)			
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$ Diff.	p
Total Score Out of 23	10.80	3.480	10.1	3.757	-.620	.028

Table V

Frequency Distributions for Rotter Scale of Internal vs. External Control

Distribution of Pre-Test Scores (N=203)

Score	Under 4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
Frequency	08	12	36	37	47	36	15	08	04
Percent	3.94%	5.91%	17.73%	18.23%	23.15%	17.74%	7.39%	3.94%	1.97%
Cumulative	3.94%	9.85%	27.59%	45.81%	68.97%	86.70%	94.09%	98.03%	100%

Distribution of Post- Test Scores (N=176)

Score	Under 4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
Frequency	15	14	23	39	36	30	14	4	1
Percent	8.52%	7.95%	13.07%	22.16%	20.46%	17.05%	7.95%	2.27%	.57%
Cumulative	8.52%	16.48%	29.55%	51.70%	72.16%	89.20%	97.16%	99.43%	100%

Table VI

Tennessee Self-Concept Scale (N=201)	Pre- Test $\bar{X}$	Pre- Test SD	Post- Test $\bar{X}$	Post- Test SD	T-Test $\bar{X}$ Diff.	T-Test SD	T-Test p
Self-Criticism*	50.99	7.57	49.78	14.96	-0.89	7.28	NS
Net Conflict	49.60	11.54	50.56	10.60	0.68	11.65	NS
Total Conflict	51.86	9.70	48.55	10.99	-3.50	12.90	>.001
Total Positivity	41.38	8.91	43.40	9.50	1.37	7.22	.015
Positive Identity	39.06	10.52	41.64	10.55	1.87	9.59	.013
Self-Satisfaction	46.96	8.60	48.67	9.62	1.21	7.83	.047
Positive Behavior	39.13	9.59	40.27	9.64	0.70	7.61	NS
Physical Self	41.22	9.54	42.31	10.03	0.68	8.39	NS
Moral Self	41.21	10.42	43.16	9.71	1.21	9.03	NS
Personal Self	46.49	10.82	48.50	10.23	1.82	10.18	.021
Family Self	40.91	10.25	42.93	10.18	1.55	8.18	.015
Social Self	43.55	9.39	45.00	9.50	0.89	7.67	NS

* Scores range from 0 to 100.

Table VII

Tennessee Self-Concept Scale — T-Tests By Sex

	Males			Females		
	$\bar{X}$	SD	p	$\bar{X}$	SD	p
Self-Criticism*	-.098	7.47	NS	-1.85	6.93	.023
Total Conflict	-5.37	14.93	>.001	-1.28	9.48	NS
Total Positivity	0.88	6.39	NS	1.96	8.05	.038
Positive Identity	1.37	9.51	NS	2.48	9.65	.029
Positive Behavior	-0.44	7.08	NS	2.07	7.98	.027
Moral Self	-0.08	7.75	NS	2.77	10.13	.020
Family Self	0.82	7.40	NS	2.42	8.95	.021

* Scores range from 0 to 100

DISCUSSION AND INTERPRETATION

Some results turned out as expected; some did not. In this section, the results will be discussed and explanations provided, insofar as possible, for them.

1. School climate. In an institution as large and diverse as a public high school, it is hard to attribute change to one particular influence. While Project Adventure is an innovative addition to the high school, an example from the School Climate Survey suggests the nature of this caveat. The survey showed a significant decrease in general enthusiasm. While that decrease may or may not be in part attributable to Project Adventure, it is important to note that of the three items on this scale, one tapped the students' attitudes toward student government. The responses to that item carried a good deal of the negative weight. In that connection it is important to note that student government in the high school started off and tried to succeed, but failed. The student government failed for reasons other than Project Adventure. The students' response to that question weighted the measurement of enthusiasm in the school. Students' responses to the items concerning school spirit remained the same or improved, but not enough to offset the negative responses to school government at the end of the year.

2. Physical self. At the least, it can be said that Project Adventure, using indirect physical education methods, did not hurt the development of physical skills in the participants. As measured on the AAHPER test of physical skill, there was general improvement on all of the tests for boys and all but two of the tests for girls. The results do not, however clarify to what extent that improvement may simply be developmental. Further investigation of comparable scores will be required before such a question can be resolved. At the moment, all that can be said is that there was significant improvement among the participants.

3. General self-concept. The quantitative data indicates overall positive change in self-concept for the sophomore class. Anecdotal and written materials collected from students, faculty, and parents indicate that Project Adventure was substantially responsible for the changes. The students reported more self-confidence at the end of the year. The students had moved to a perception of less external control at the end of the year. The students' confidence was raised. The physical education program seemed to raise their confidence because it showed them that they could do things they didn't think they could do. The experiential education program seemed to be affecting their confidence in inter-personal relations in a less physical way. By talking with people in Gloucester, by telephoning an official in Boston, by successfully completing work on a recycling drive, for example, they discovered faith in their capacities and they raised their own concept of themselves. This increased self-esteem, reflected in the Rotter and Tennessee tests, was also evidenced in an increase in activity by both the girls and the boys. The Questionnaire revealed that the students became aware of more opportunities for activity and that they took advantage of these opportunities.

Among them were such things as volunteer work, diet clubs, and recycling drives. The growth in self-confidence was also noted by parents as reflected on a questionnaire at the end of the school year.

The girls showed more significant improved changes in self-concept. On the Tennessee Scale, for example, they changed significantly for the better in total positivity, positive identity, positive behavior, moral self, and family self, and they showed a significant decrease in self-criticism. The boys evidenced less change, but an important result was their significant decrease in total conflict (conflict in self-perception) as measured on the Tennessee Self-Concept Scale. The decrease indicated a lessening in confusion and contradiction in self-perception. A main factor related to this improvement in self-concept was what was variously called by the staff of the Project, enthusiasm for life, or zest, or infectious interest.

Despite expectations to the contrary, there was no significant change in physical self-concept for any group. Clearly, the Project has been more affective and less physical in its effect than might have been expected.

It should be noted that the absence of significant change on "physical self-concept" on the Tennessee Self-Concept tests may be a function of the kinds of questions on the test. The 18 items tend to cluster around a person's feelings about his personal attractiveness (attributes like height, weight, and sex appeal) and feelings of physical health or sickness.

The Project's physical education program dealt by contrast with the development of a sense of physical competence, coordination, and trust in one's own ability to do physically demanding things rather than growth in awareness of feeling healthy or physically attractive. Thus, the discrepancy between findings on less quantitative measures and the Tennessee test may be attributed to the differing definitions of "physical self-concept."

4. Attitude toward the Project. The indirect measure referred to in the "Results" section, suggests that the participants were involved in the Project and responsive to it. Additional measures of attitude include a projective rating scale on the questionnaire in which 64% of the students who completed it wrote positive (as opposed to neutral or negative) responses to the questions, "What would you tell another student about Project Adventure?"

5. Sex differences. One of the most significant results in the Project was the differences in the responses of the girls and the boys to it and to the tests and measuring instruments. The expectation was that the girls would not do as well as the boys because of the emphasis on outdoor adventure and materials often stereotypically associated with boys. The results, however, were contrary to expectation. The girls did do well, in many instances better than the boys, and they seemed to profit by the experience.

A number of explanations are possible. Among he most compelling are the following:

This project was connected with the high school; girls at this age do everything connected with school more enthusiastically than boys; hence, their better performance in some areas and their increased self-concept.

Another possible explanation revolves around the fact that those leading the program were unusually strong male figures. This had an effect on some of the boys who could identify with a strong male figure, but it also affected the girls who were not accustomed to attention from such figures in school and who were not accustomed to having their gym classes led by males. The girls may have felt their femininity more and reflected that in enhanced self-concept.

Still another explanation may be that the girls were more ready to talk about their experiences and to rate them more positively. Since it was a bigger jump for them to get involved in this outdoors, physically demanding program than for the boys, the girls reflected in their self-ratings, more change.

It also seems from the data that the boys fantasized about more activities before the program but participated in more activities after the program. So, in a sense, the boys translated their thoughts into action. But there is not much evidence for this and the point is debatable.

In summarizing the sex differences which were apparent in the results, it should be remembered that girls generally perform better in school, that the male stereotype of outdoor activity was commonplace, that the kind of attention the girls got was different, and that the freedom of sex roles as suggested by increasing emphasis on women and women's rights all played a part in the ratings made by the boys and the girls. The increases in self-concept among the girls were probably part of a general trend in the culture toward increased self-confidence; while, paradoxically, at the same time, the increased scores probably reflected what was an undercurrent in the Project - that the girls felt it was nice to be a female in a situation defined as a male situation.

Overall, the results suggest that the Project had an auspicious beginning and that it bears continuation and continued evaluation.

QUALITATIVE DATA

On the Pre- and Post- Questionnaires, students were asked a series of open-end questions about themselves and the course. A sampling of replies found on the following pages indicates the variety of experiences and attitudes.

The Pre- question asked, "How do you feel about participating in Project Adventure?"

The Post- question was, "In what ways has Project Adventure changed your school experience this year as compared to last year?"

	Pre-	Post-
girl:	"I don't think I am too thrilled about participating in the gym part. I am really scared about swinging on ropes out in the woods and walking on those ropes and jumping from the tree down on the stumps. Even when I was just watching Jim do it and he told us to spot in case he fell or the stump did . . . I shook all over and my hand turned icy cold."	"Not as shy as I used to be but I am still quite shy. Have stayed after school more to get involved in other things. Got up enough courage to stand in front of about 20 sixth grade kids and conduct a lesson."
girl:	"I would love to. I love camping, hiking. I love nature."	"I have really gotten to know kids better. I feel like I really know most of the sophomore class even though this is my first year here. I have found myself looking forward to school much more and enjoying myself too. I feel much more interested in the school this year."
boy:	"It sounds good."	"I have decided that there is no reason that I shouldn't play football if I want to and Project Adventure helped me make that decision indirectly."

girl:	"I don't know."	"It made me want to skip gym every day. The Project Adventure people push too hard . . . it's like boot camp."
girl:	"I am willing to."	"It has made me satisfied with myself - satisfied that I gave, I think, everything offered a fair try. I didn't get the chance to do a couple of the things on the ropes course that I would have liked to try . . . I think I have really been able to accept challenges in an easier stride - it's much easier for me."
boy:	"I would love to participate fully."	"Been late for class more times. Changed my attitude toward heights".
boy:	"I think I would appreciate such a program.	"I feel as if I have learned a lot. I've become much less concerned about competitive achievement (marks and team sports). I also feel wanted once in awhile."
girl:	"I'd like to, but it all depends on what I have to do."	"Got me more involved in our environment because I got into the recycling project, the Yurt building (I hope to go on a Yurt trip.), and the Haymarket. I also enjoyed the trip to Acadia National Park."